

Effects of temperature and airflow on volume development during baking and its influence on quality of cake

ABSTRACT

Volume and texture of cake are among the important parameters in measuring the quality of cake. The processing conditions play important roles in producing cakes of good quality. Recent studies focused more on the formulation and the manipulation of baking temperature, humidity and time instead of airflow condition. The objective of this study was to evaluate the effects of baking temperature and airflow on the volume development of cake and final cake quality such as volume development, firmness, springiness and moisture content. The cake was baked at three different temperatures (160°C, 170°C, and 180°C), and two different airflow conditions. Baking time, height changes of batter, texture and moisture content of cake were compared to identify the differences or similarities on the final product as the process conditions varied. Results showed that, airflow has more significant effects towards the product quality compared to baking temperature especially on baking time which was 25.58 - 45.16%, and the rate of height changes which was 0.7 mm/min. However, different baking temperatures had more significant effects towards volume expansion which was 2.86 - 8.37% and the springiness of cake which was 3.44% compared to airflow conditions.

Keyword: Airflow; Baking process; Temperature; Texture; Volume expansion